

### ABSTRACT OF THE DISCLOSURE

Micro-fluid devices and methods for their use are provided. The subject devices are characterized by the presence of at least one micro-valve comprising a phase reversible material, e.g. a reversible gel, that reversibly changes its physical state

5 in response to an applied stimulus, e.g. a thermoreversible gel. In using the subject device, fluid flow along a flow path of the device is modulated by applying an appropriate stimulus, e.g. changing the temperature, to the microvalve. The subject devices find use in a variety of applications, including micro-analytical applications.